TETRA TECH

Via E-Mail

P.N. 117-3008059

May 19, 2011

Mr. Joe Lemay
Remedial Project Manager
MA Superfund Section
USEPA - New England
Five Post Office Square, Suite 100
Boston, MA 02109-3912

Re: Well Integrity Testing, Central Area Wells G&H Site, Woburn, Massachusetts

Dear Joe Lemay:

This letter summarizes the results of integrity testing of monitoring wells in the Central Area of the Wells G&H Superfund Site between October 2010 and January 2011. One hundred ninety four (194) monitoring wells were identified for possible integrity testing. The monitoring wells identified for integrity testing were (1) located on the east side of the Aberjona River; (2) selected wells within the Aberjona River wetland, (3) not located on any source area properties; and (4) not sampled since at least 2002.

The purpose of the well integrity testing was to establish the monitoring well network available for evaluating groundwater quality in the Central Area. The integrity testing was done according to the standard operating procedure included in the *Quality Assurance Project Plan for Vapor Intrusion Assessment* (GeoTrans, 2010) and included a visual inspection of the well, well depth measurement, and a slug test with water level measurements. Slug tests were performed by recording the initial water level measurement and then removing a known volume of water from the well. The water levels were recorded periodically for 48 hours or until 50 percent of the induced water level change had recovered, whichever came first. To pass the integrity test, the water level in a well had to recover at least 50 percent within 48 hours. The results of the well integrity tests are included in Table 1 and summarized below.

- Total wells assessed: 194
- 106 wells passed test;
- Total of 88 wells either failed test or were not accessible, including:
  - 5 wells failed test (less than 50 percent recovery in 48 hours);
  - 9 wells were dry at the time of the testing;
  - 36 wells were damaged/destroyed;
  - 5 wells were not found by surveyor – presumably destroyed;
  - 2 wells were located under equipment and not accessible;
  - 22 wells were located in the Aberjona River marsh and not accessible;
  - 3 wells were located behind a locked gate (S72 cluster) and not accessible;

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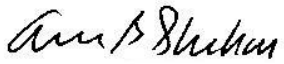
- 1 multi-level cluster (4 wells) was located in a manhole locked with a metal bar (UC13 cluster) and not accessible and
- 2 well roadbox covers were sand locked and not opened before snow fell (K60D and K60M) and not accessible.

We are currently evaluating the results of the integrity testing to develop a list of existing Central Area wells to sample later this year. As part of this evaluation we are considering the potential for redevelopment of wells, the recharge rates, and the location (vertically and horizontally) of the wells. We anticipate providing you a letter in late-May in which we will propose a list of wells and analytes to include in a screening sampling event to be conducted this summer. The results from this screening sampling will provide information regarding the current quality of groundwater in the Central Area and will be used to develop a work plan for the Central Area RI/FS.

If you have any questions regarding the well integrity testing, please feel free to contact Tim Cosgrave or Clayton Smith.

Sincerely,



Anne B. Sheehan
Project Manager

CC: J. Coyne
D. Sullivan
T. Cosgrave
C. Smith
J. Guswa

References

GeoTrans, 2010, *Quality Assurance Project Plan for Vapor Intrusion Assessment*, March 25, 2010.

Table 1. Summary of Well Integrity Testing Results

Location	Pass Test	Formation	Diameter (inches)	Top Of Screen Depth (feet feet from GS)	Bottom Of Screen Depth (feet from GS)	2010 Measured Depth (from GS)	Depth to Bedrock (feet from GS)	Most Recent Sample Date
BUG1-1	yes	U	2	81.6	83.2	82.71	84	8/31/93
BUG1-10	yes	U	0.75	12.4	14.4	NM	84	5/11/93
BUG1-11	yes	U	0.75	3.4	8.4	NM	84	5/11/93
BUG1-2	yes	U	0.75	77.2	78.2	NM	84	5/10/93
BUG1-3	yes	U	0.75	68.7	70.7	NM	84	5/10/93
BUG1-4	yes	U	0.75	61.1	63.1	NM	84	8/31/93
BUG1-5	yes	U	0.75	52.1	54.1	NM	84	5/10/93
BUG1-6	yes	U	0.75	44.4	46.4	NM	84	5/11/93
BUG1-7	yes	U	0.75	36.9	38.9	NM	84	8/31/93
BUG1-8	yes	U	0.75	28.7	30.7	NM	84	8/31/93
BUG1-9	yes	U	0.75	20.6	22.6	NM	84	5/11/93
DP10	yes	U	0.38	12.4	13.4	NM	NA	8/3/93
DP11	yes	U	0.38	9.6	10.6	NM	NA	8/3/93
DP12	yes	U	0.38	16.6	17.6	NM	NA	7/30/93
DP13	Damaged/Destroyed	U	0.38	10.1	11.1	NM	NA	6/12/92
DP14	DRY	U	0.38	9	10	NM	NA	6/12/92
DP18D	yes	U	0.38	25	26	NM	NA	8/2/93
DP18S	DRY	U	0.38	17.5	18.5	NM	NA	8/2/93
DP19	yes	U	0.38	16.5	17.5	NM	NA	8/3/93
DP1D	yes	U	0.38	16.6	17.6	17.56	NA	12/17/91
DP1S	yes	U	0.38	6.6	7.6	7.62	NA	12/17/91
DP20	yes	U	0.38	16.1	17.1	NM	NA	8/3/93
DP21D	yes	U	0.38	18.8	19.8	NM	NA	8/2/93
DP21S	Damaged/Destroyed	U	0.38	11.3	12.3	NM	NA	7/29/93
DP22	yes	U	0.38	16.1	17.1	NM	NA	8/2/93
DP24D	no	U	0.38	12.8	13.8	NM	NA	8/6/93
DP24S	DRY	U	0.38	10.4	11.4	NM	NA	4/5/93
DP26	DRY	U	0.38	17.7	18.7	NM	NA	8/6/93
DP28	no	U	0.38	9.7	10.7	NM	NA	4/26/93
DP29	Damaged/Destroyed	U	0.38	13.9	14.9	NM	NA	5/27/92
DP2D	yes	U	0.38	36.2	37.2	37.25	NA	4/5/93
DP2M	yes	U	0.38	21	22	22.02	NA	4/5/93
DP2S	no	U	0.38	6.6	7.6	7.64	NA	4/5/93
DP3	Damaged/Destroyed	U	0.38	14.2	15.2	3.17	NA	12/17/91
DP31	yes	U	0.38	15.5	16.5	NM	NA	8/3/93
DP32	yes	U	0.38	12	13	NM	NA	8/2/93
DP35	yes	U	0.38	14.9	15.9	NM	NA	7/30/93
DP36	yes	U	0.38	8	9	NM	NA	4/23/93
DP37D	yes	U	0.38	17	18	NM	NA	4/23/93
DP37S	Damaged/Destroyed	U	0.38	14.1	15.1	NM	NA	5/27/92
DP38	yes	U	0.38	10.7	11.7	NM	NA	8/2/93
DP39	yes	U	0.38	10.8	11.8	NM	NA	8/3/93
DP4	DRY	U	0.38	19.1	20.1	19.50	NA	4/22/93
DP40	yes	U	0.38	8.5	9.5	NM	NA	7/30/93
DP41	Damaged/Destroyed	U	0.38	15.4	16.4	NM	NA	8/3/93
DP5	DRY	U	0.38	15.9	16.9	17.31	NA	4/22/93
DP6D	yes	U	0.38	27.6	28.6	NM	NA	8/9/93
DP6S	no	U	0.38	17.2	18.2	NM	NA	8/9/93
DP7	yes	U	0.38	19.6	20.6	NM	NA	8/9/93
DP8	DRY	U	0.38	21.9	22.9	23.62	NA	6/12/92
DP9D	yes	U	0.38	10.1	11.1	NM	NA	4/23/93
DP9S	yes	U	0.38	6.4	7.4	NM	NA	5/26/92
GO1D	yes	RS	1.5	24.3	39.3	39.09	19	8/10/93

Table 1. Summary of Well Integrity Testing Results

Location	Pass Test	Formation	Diameter (inches)	Top Of Screen Depth (feet feet from GS)	Bottom Of Screen Depth (feet from GS)	2010 Measured Depth (from GS)	Depth to Bedrock (feet from GS)	Most Recent Sample Date
GO1S	DRY	U	2	8	18	17.61	18	5/7/96
K42D	yes	U	1.12	65	66	66.43	NA	7/26/93
K42M	yes	U	1.12	45	46	40.23	NA	7/27/93
K42S	yes	U	1.12	20	21	19.40	NA	7/27/93
K43D	Damaged/Destroyed	U	1.12	15.4	16.4	NM	NA	7/22/93
K43S	no	U	1.12	8	9	8.94	NA	7/22/93
K44D	Damaged/Destroyed	U	1.12	16.2	17.2	NM	NA	7/26/93
K44S	Damaged/Destroyed	U	1.12	8.2	9.2	NM	NA	7/29/93
K45	yes	U	1.12	15.4	16.4	16.55	NA	9/8/93
K46	yes	U	1.12	8	9	7.89	NA	7/28/93
K47	yes	U	1.12	14.4	15.4	14.85	NA	7/22/93
K48	yes	U	1.12	15.6	16.6	14.59	NA	7/28/93
K49D	yes	U	1.12	23	24	12.52	NA	7/23/93
K49M	yes	U	1.12	15	16	15.78	NA	7/23/93
K49S	yes	U	1.12	7	8	7.98	NA	7/29/93
K50	Damaged/Destroyed	U	1.12	17	18	NM	NA	7/23/93
K51D	Damaged/Destroyed	U	1.12	25.1	26.1	11.80	NA	9/7/93
K51M	Damaged/Destroyed	U	1.12	20	21	7.14	NA	7/23/93
K53D	yes	U	1.12	35	36	35.10	NA	7/23/93
K53M	Damaged/Destroyed	U	1.12	24.6	25.6	NM	NA	7/23/93
K54D	yes	U	1.12	35	36	36.66	NA	7/23/93
K54M	yes	U	1.12	27.5	28.5	27.97	NA	7/27/93
K55D	Damaged/Destroyed	U	1.12	38	39	NM	NA	7/26/93
K55M	yes	U	1.12	28.2	29.2	26.37	NA	9/9/93
K56D	Surveyed - not found	U	1.12	38	39	0.21	NA	7/26/93
K56M	yes	U	1.12	27	28	27.06	NA	7/26/93
K57D	yes	U	1.12	30.5	31.5	31.62	NA	7/27/93
K57M	yes	U	1.12	24	25	24.83	NA	7/27/93
K58D	yes	U	1.12	22	23	21.93	NA	9/8/93
K58S	yes	U	1.12	17	18	17.79	NA	7/28/93
K59D	Under Equipment	U	1.12	14.6	15.6	NM	NA	9/9/93
K59S	Under Equipment	U	1.12	7.6	8.6	NM	NA	9/9/93
K60D	Cannot Open	U	1.25	46.1	47.1	NM	NA	10/19/93
K60M	Cannot Open	U	1.25	39	40	NM	NA	10/19/93
K61D	yes	U	1.25	44.1	45.1	43.50	NA	10/20/93
K61M	yes	U	1.25	38	39	39.42	NA	10/20/93
K62D	Surveyed - not found	U	1.25	41.8	42.8	NM	NA	10/19/93
K62M	yes	U	1.25	37	38	35.40	NA	10/19/93
K62S	yes	U	1.25	32	33	34.80	NA	10/19/93
K63D	Surveyed - not found	U	1.25	47.5	48.5	NM	NA	10/18/93
K63M	Surveyed - not found	U	1.25	38.6	39.6	NM	NA	10/18/93
K63S	Surveyed - not found	U	1.25	31.6	32.6	NM	NA	10/18/93
K64D	yes	U	1.25	41.9	42.9	41.65	NA	10/20/93
RMW1	Damaged/Destroyed	U	2	2	12	NM	NA	7/30/93
RMW2	Damaged/Destroyed	U	2	2	12	NM	NA	7/30/93
S22	yes	U	1.5	4	44	32.29	36.5	8/9/93
S39	Damaged/Destroyed	U	24	78	88	NM	NA	8/26/91
S40	Located in Marsh	U	24	69	79	NM	NA	8/21/91
S6	yes	U	1.4	4	94	87.26	84	8/10/93
S63D	yes	RS	1.5	26	36	34.69	22	5/7/96
S64D	yes	RS	1.5	40	55	55.75	35	8/11/93
S64M	yes	U	1.5	27	32	31.95	NA	8/11/93
S64S	yes	U	1.5	10	15	15.11	NA	8/11/93

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Location	Pass Test	Formation	Diameter (inches)	Top Of Screen Depth (feet feet from GS)	Bottom Of Screen Depth (feet from GS)	2010 Measured Depth (from GS)	Depth to Bedrock (feet from GS)	Most Recent Sample Date
S65DR	yes	RS	2	47	57	57.17	38.5	8/11/93
S65M	yes	U	1.5	27	37	33.60	NA	8/6/93
S65S	DRY	U	1.5	4	24	22.78	NA	4/27/93
S66D	Damaged/Destroyed	RS	1.5	19.7	34.7	NM	11.5	9/20/93
S67D	yes	RS	1.5	60	75	68.43	54	4/23/97
S67M	yes	U	1.5	33	43	42.18	NA	4/23/97
S67S	yes	U	1.5	24	34	31.54	NA	4/23/97
S68D	yes	U	1.5	55	105	105.52	105	10/16/02
S68S	yes	U	1.5	14.5	45	43.76	NA	8/21/91
S69D	yes	RS	1.5	40	55	29.71	35	8/4/93
S7	yes	U	1.4	4	28	20.23	18	11/6/94
S70M	yes	U	1.5	42	62	56.98	NA	5/6/96
S72D	locked Gate	RS	1.5	122	137	-1.00	116	8/30/93
S72M	locked Gate	U	1.5	54.5	92.5	-1.28	NA	8/30/93
S72S	locked Gate	U	1.5	14	54	-1.03	NA	8/21/91
S73D	Damaged/Destroyed	RS	1.5	41	56.5	NM	36	2/3/92
S73S	Damaged/Destroyed	U	1.5	10	35	NM	NA	2/3/92
S74D	yes	RS	1.5	73	88.5	88.37	67.5	9/2/93
S74S	yes	U	1.5	8	58	63.96	NA	8/31/93
S77D	Located in Marsh	U	1.5	133.5	138.5	NM	NA	4/7/94
S77S	Located in Marsh	U	1.5	25	30	NM	NA	9/22/92
S82	yes	U	1.5	25	35	33.75	NA	10/15/02
S84D	yes	U	1.5	73	78	77.44	81.5	8/20/91
S84M	yes	U	1.5	40	45	43.20	NA	8/20/91
S84S	yes	U	1.5	13	18	18.66	NA	8/20/91
S85M	yes	U	1.5	65	71	70.71	NA	9/2/93
S85S	yes	U	1.5	20	30	29.20	NA	10/15/02
S86D	yes	U	1.5	47	52	47.03	NA	8/26/91
S86S	yes	U	1.5	20	30	30.48	NA	10/16/02
S87D	yes	U	2	76.5	78.5	79.03	NA	10/15/02
S87M	yes	U	2	37	39	40.46	NA	8/23/91
S87S	yes	U	2	7	9	9.08	NA	8/23/91
S88D	Located in Marsh	U	2	77	79	NM	NA	10/6/92
S88M	Located in Marsh	U	2	37	39	NM	NA	10/7/92
S88S	Located in Marsh	U	2	7	9	NM	NA	10/7/92
S89D	Located in Marsh	U	2	116.5	118.5	NM	NA	9/2/93
S89M	Located in Marsh	U	2	53	55	NM	NA	8/26/91
S89S	Located in Marsh	U	2	29	31	NM	NA	10/16/02
S90D	yes	RS	2	65	67	67.26	66	8/22/91
S90M	yes	U	2	37	39	39.67	NA	8/22/91
S90S	yes	U	2	7	9	9.75	NA	8/22/91
S91D	Located in Marsh	U	2	77	79	NM	NA	9/1/93
S91M	Located in Marsh	U	2	37	39	NM	NA	9/1/93
S91S	Located in Marsh	U	2	7	9	NM	NA	9/1/93
S92D	Located in Marsh	U	2	76.5	78.5	NM	NA	9/25/92
S92I	Located in Marsh	U	2	55	57	NM	NA	9/25/92
S92M	Located in Marsh	U	2	37	39	NM	NA	9/25/92
S92S	Located in Marsh	U	2	9	14	NM	NA	9/25/92
S93D	Located in Marsh	U	2	77	79	NM	NA	9/1/93
S93M	Located in Marsh	U	2	41.5	43.5	NM	NA	8/27/91
S93S	Located in Marsh	U	2	10	14	NM	NA	8/27/91
S94D	yes	U	2	76.6	78.6	78.96	NA	8/20/91
S94M	yes	U	2	37	39	39.62	NA	8/20/91

Table 1. Summary of Well Integrity Testing Results

Location	Pass Test	Formation	Diameter (inches)	Top Of Screen Depth (feet feet from GS)	Bottom Of Screen Depth (feet from GS)	2010 Measured Depth (from GS)	Depth to Bedrock (feet from GS)	Most Recent Sample Date
S94S	yes	U	2	12	14	2.75	NA	8/20/91
S95D	Located in Marsh	U	2	73	75	NM	NA	12/3/93
S95M	Located in Marsh	U	2	37	39	NM	NA	9/24/92
S95S	Located in Marsh	U	2	9	14	NM	NA	12/3/93
S97D	yes	RS	2	36.5	44	42.11	33.5	9/2/93
S97S	yes	U	2	9	14	14.88	NA	11/19/85
UC11-4	Damaged/Destroyed	RD	3.5	173	173	NM	22	9/9/93
UC12-4	Damaged/Destroyed	RD	3.5	159	159	NM	32	9/9/93
UC13-1	Cannot Open	RD	3.5	213	213	NM	47	8/17/93
UC13-2	Cannot Open	RD	3.5	152	152	NM	47	8/17/93
UC13-3	Cannot Open	RS	3.5	114	114	NM	47	8/17/93
UC13-4	Cannot Open	RS	3.5	72	72	NM	47	8/17/93
UC14-1	yes	RD	3.5	339	339	NM	75.1	4/21/97
UC14-2	Damaged/Destroyed	RD	3.5	295	295	NM	75.1	4/21/97
UC14-3	Damaged/Destroyed	RD	3.5	236	236	NM	75.1	4/21/97
UC14-4	Damaged/Destroyed	RS	3.5	157	157	NM	75.1	4/21/97
UC14-5	Damaged/Destroyed	RS	3.5	98	98	NM	75.1	4/21/97
UG1-2	yes	RD	4.5	481	481	NM	23	5/7/96
UG1-3	Damaged/Destroyed	RD	6	390	390	NM	23	5/9/96
UG1-5	yes	RD	6	172	172	NM	23	3/23/94
UG1-6	Damaged/Destroyed	RD	6	159	159	NM	23	11/14/94
UG1-7	Damaged/Destroyed	RS	6	121	121	NM	23	5/7/96
UG2-1	yes	U	0.38	42	43	NM	NA	8/27/91
UG2-2	yes	U	0.38	38	39	NM	NA	8/27/91
UG2-3	yes	U	0.38	24	25	NM	NA	8/26/91
UG2-4	yes	U	0.38	9	10	NM	NA	8/26/91
UG4-1	Damaged/Destroyed	U	1	68	70	NM	NA	8/23/91
UG4-2	Damaged/Destroyed	U	0.38	54	55	NM	NA	8/22/91
UG4-3	Damaged/Destroyed	U	0.38	39	40	NM	NA	8/22/91
UG4-4	Damaged/Destroyed	U	0.38	24	25	NM	NA	8/22/91
UG4-5	Damaged/Destroyed	U	0.38	9	10	NM	NA	8/23/91
UG5	Damaged/Destroyed	U	2	2	11	3.60	NA	3/3/93
UG6	Damaged/Destroyed	U	2	2.5	11.5	NM	NA	3/3/93
UG7D	yes	U	2	25.5	34.5	33.95	NA	3/3/93
UG7S	yes	U	2	2	11	12.79	NA	3/3/93

GS - ground surface
NA - not applicable
NM - not measured
U - Well completed in unconsolidated deposits
RS - Well completed in upper 100 feet of bedrock
RD - Well completed greater than 100 feet below top of bedrock